CARGILL
SALT DIVISION

7220 Central Ave.
Newark, CA 94560-4206
510/797-1820 1-800-321-1458
Fax: 510/790-8189

April 1, 1996

Ms. Loretta Barsamian
Executive Officer
California Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, California 94612

ATTENTION: Lila Tang ✓

Dear Ms. Barsamian:

Please find attached the self-monitoring report for the NPDES Permit No. CA0028690 for our Redwood City facility wet weather discharge of rainwater from our crystallizer beds.

Discharge of rainwater from the crystallizer beds occurred March 7 through March 13, 1996. Approximately 41 acre feet of water was discharged to First Slough in Redwood City. The field measurements showed a range of Baume readings from 1.8 to 3.9 and a pH range of 7.0 to 8.4. The laboratory measurement of TDS was 21,000 mg/l and laboratory measurement of pH was 8.96. measured on day later

Although the field pH measurements showed we were in compliance with the discharge limits of 6.5 to 8.5, the laboratory measurement of 8.96 exceeded the limit.

> "I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of find and imprisonment for knowing violations [40 CFR 122.22(d)]."

Sincerely,

Barbara N. Ransom
Environmental Manager

cc: U.S. Environmental Protection Agency

7213 7125

b. APPENDIX B.

COMPLIANCE EVALUATION SUMMARY

b. COMPLIANCE EVALUATION SUMMARY

Effluent Limitations

1. The discharge of Waste No. 1 containing constituents in excess of the following limits is prohibited.

Constituents	Units	Maximum	Results
Total Dissolved Solids	mg/l	32,000	1.8-3.9 Be (in field) 21,000 ppm (laboratory)
Biochemical Oxygen Demand Five day	mg/l	20	4.5 mg/l

	Results
2. Waste No. 1 shall not have a pH less than 6.5 nor greater than 8.5	Ranged between pH 7.0-8.4 (field) 8.96 (laboratory)

3. The survival of test fishes of the species *Menidia beryllina* or silverside minnow is a 96 hour static bioassay of the discharge of Waste No. 1 shall be a median of 90 percent survival and a 90 percentile value of not less than 70 percent survival.

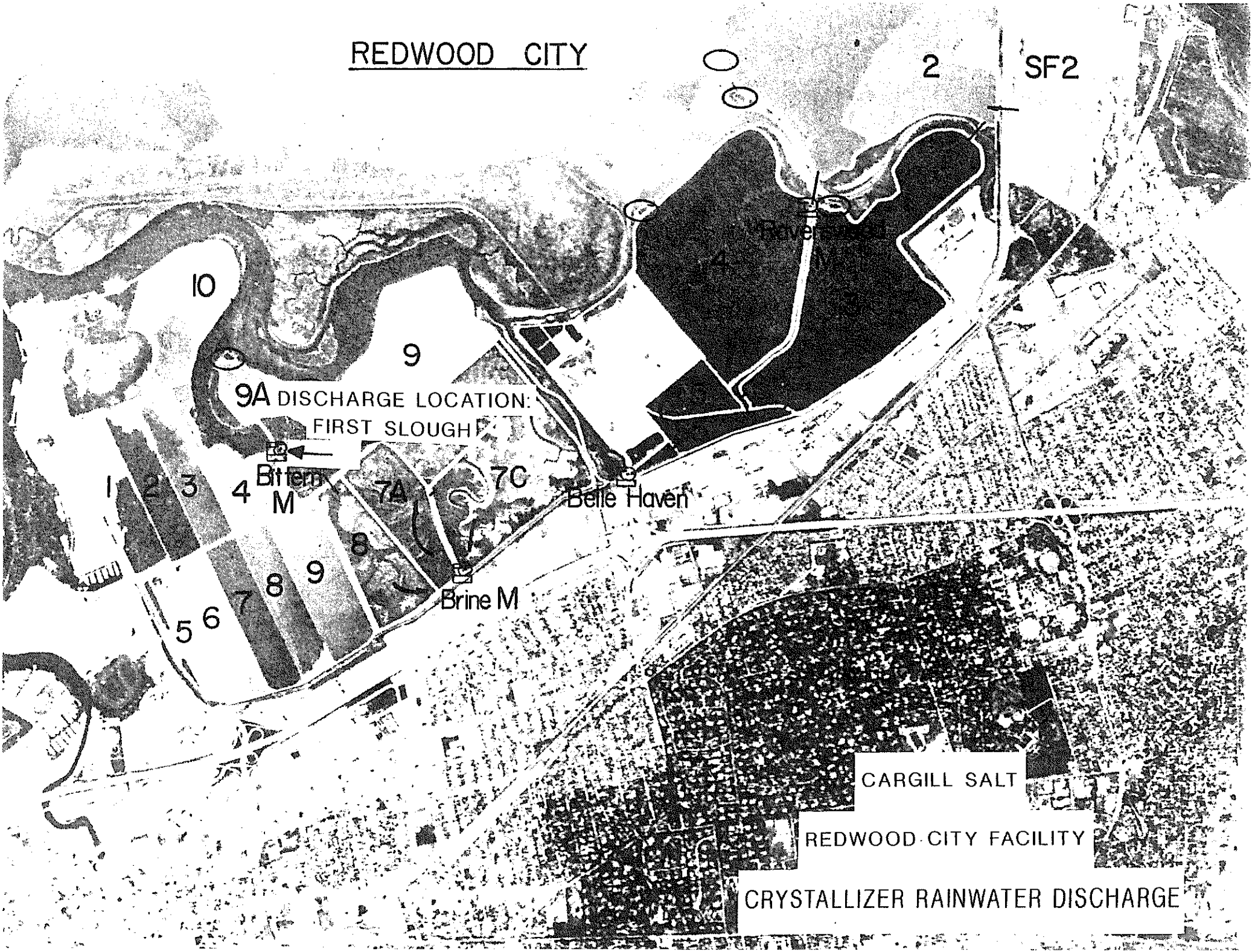
   Results: The results indicate that there was 95% survival in the 100% effluent sample at the end of 96 hours.

APPENDIX C.

MAP

CARGILL SALT

REDWOOD CITY


REDWOOD CITY
2
SF2
10
9
9A DISCHARGE LOCATION:
FIRST SLOUGH
Bittern
M
1
2
3
4
7A
7C
Belle Haven
8
9
7
8
5
6
Brine M
CARGILL SALT
REDWOOD CITY FACILITY
CRYSTALLIZER RAINWATER DISCHARGE

APPENDIX D.

LABORATORY DATA

REPORT OF ACUTE BIOMONITORING TEST

RAINWATER DISCHARGE FROM CRYSTALIZERS COLLECTED 07 MARCH, 1996

REDWOOD CITY FACILITY

Prepared for

Cargill Salt Company
7220 Central Avenue
Newark, CA 94560

Prepared by

S.R. Hansen & Associates
4085 Nelson Ave, Suite I
Concord, Ca. 94520

25 MARCH, 1996

1. INTRODUCTION

Beginning in February, 1992, S.R. Hansen & Associates began conducting static acute toxicity tests for the Cargill Salt Company in Newark, California as part of the compliance monitoring mandated in the facility's NPDES permit. This report describes the procedures used and the results obtained for acute toxicity tests and chemical analyses performed on a sample of Rainwater Discharged from the Crystallizers at the Redwood City facility between 06 - 07 March, 1996.

2. MATERIALS AND METHODS

Sample Collection - A 24-hr. composite sample of Rainwater Discharge from the Crystallizers at the Redwood City facility was collected by Cargill Salt Company staff on 06 - 07 March, 1996. The sample was stored in a pre-cleaned 2.5 gallon cubitainer, packed in an ice chest, and maintained at 4°C for transport to the S.R. Hansen & Associates (SRH&A) laboratory via SRH&A courier on 07 March, 1996. Toxicity tests were initiated on 08 March, 1996 (due to the availability of test organisms).

Test Organisms - Acute bioassays were performed using *Menidia beryllina*. The *Menidia* were obtained from an outside supplier (Aquatic Indicators, St. Augustine, FL).

Toxicity Test Procedures - *Menidia beryllina* (11 days old) were obtained from Aquatic Indicators (St. Augustine, FL.) and were held in a five gallon aquarium prior to use in the tests. The animals were exposed to the effluent for a period of 96 hours under static, (renewal at 48 hours) conditions. The test was performed at a salinity of 20 ppt. One-liter beakers were used for the exposures, with a total volume of 500 ml of effluent sample added to each beaker. Arrowhead Spring Water (salinity adjusted to 20 ppt using artificial sea salts, Tropic Marin) was used as the control and diluent. Ten fish were placed into each container, and each exposure was run in duplicate. Temperature, dissolved oxygen, pH, electrical conductivity, salinity, and number of dead organisms were recorded daily in each exposure.

Chemical Test Procedures - Representative aliquots of the effluent were sent to Sequoia Analytical (Walnut Creek, CA) for analyses. The samples were refrigerated to 4°C and shipped in a cooler with frozen blue ice to the contract lab via SRH&A courier.

3. RESULTS

The results of the acute toxicity tests and chemical analyses performed on the 07 March, 1996 Rainwater Discharge from the Redwood City Crystallizers are presented in Tables 1 and 2, respectively and can be summarized as follows:

3.1 ACUTE BIOASSAY TEST

The results from the acute toxicity bioassay using *Menidia beryllina* as the test indicator species indicates that there was 95% survival in the 100% effluent sample after 96 hours (Table 3-1). It should be noted, however, that survival in the control treatment failed to meet the required 90% survivorship (i.e., 80%).

3.2 CHEMICAL ANALYSES

Chemical analyses of the effluent sample that was discharged from the crystallizer between 06 - 07 March, 1996 indicate that two (2) of the analytes (i.e., BOD and TDS) were present in detectable concentrations and an exceedance in the pH limit (Table 3-2).

TABLE 3-1. RESULTS OF 96-HR *MENIDIA BERYLLINA* BIOASSAY ON RAINWATER DISCHARGE FROM THE CARGILL SALT COMPANY REDWOOD CITY FACILITY CRYSTALIZERS (COLLECTED 06-07 MARCH, 1996)

Concentration (% Effluent)	% Survival		AVERAGE
	Replicate A	Replicate B	
100	90	100	**95**
Control	80	80	**80**

TABLE 3-2. RESULTS OF CHEMICAL ANALYSES PERFORMED ON RAINWATER DISCHARGE FROM THE CARGILL SALT COMPANY REDWOOD CITY FACILITY CRYSTALIZERS (COLLECTED 06-07 MARCH, 1996)

ANALYSIS	CONCENTRATION (mg/L)	DISCHARGE LIMIT (mg/L)
Salinity	20.0	---
pH	8.96*	(>6.5 & <8.5)
Total Dissolved Solids (EPA 160.1)	21,000	32,000
BOD (EPA 405.1)	4.5	20

* - Exceeds discharge limit

4. CONCLUSIONS

The results of the the tests performed on the sample that that was discharged from the crystallizers at the Redwood City facility indicate that there were no exceedances in the fish acute bioassay and only one exceedance of the chemical discharge limits. These are discussed in the following sections:

4.1 FISH ACUTE BIOASSAY

The results indicate that there was 95% survival in the 100% effluent sample at the end of 96 hours.

According to Regional Board guidance in the 1991 draft Basin Plan, the median and 90 percentile values are interpreted as follows:

> **11 Sample Median -** If five or more of the past ten samples have less than 90 percent survival, then survival of less than 90 percent on the next, eleventh, sample represents a violation of the effluent limitation.
>
> **90th Percentile -** If one or more of the past ten samples is less than 70 percent survival, then survival of less than 70 percent on the next, eleventh, sample represents a violation of the discharge limitation.

According to our records, this is the fifth time that an acute toxicity test has been performed on effluent discharged from the Redwood City Crystallizer Pond. Of those five events, two have exhibited less than 90% survival and none have exhibited <70% survival. Therefore, according to the discharge permit, neither of the discharge limitations have been exceeded.

It should be noted that control survival failed to meet the minimum requirement of 90%. We feel that the results obtained from this testing event are valid since there was minimal mortality in the effluent sample. This indicates that there was possssibly random contamination in the test chambers.

4.2 CHEMICAL ANALYSES

The chemical analyses results indicate that only pH exceeded the limits of the discharge permit.

Data sheets for these bioassay tests are provided in the Appendix to this report.

APPENDIX

LABORATORY DATA SHEETS

S.R. HANSEN & ASSOCIATES

FRESHWATER ACUTE/CHRONIC TEST DATA SHEET

START DATE 3/8/96 TIME 1330 TEST MATERIAL RWC Crystallizer DILUENT N/A
END DATE _____ TIME _____ SPECIES/AGE 11 d.o. M. bahia RENEWAL FREQUENCY @ 48 L

CONC	TEMP° C	D.O. OLD	D.O. NEW	pH OLD	pH NEW	~~COND.~~ Sal ‰	ALK.	HARD.	SURVIVAL A	SURVIVAL B	SURVIVAL C	SURVIVAL D	PREPARATION
Cont	25	8.2	~~7.91~~		7.71	20			10	10			TIME: 1330
100%	↓		8.3		8.96	20			10	10			DATE: 3/8/96
													ID: (a)
Cont	25	6.8		8.00		19.9			10	10			TIME: 8:45
100%	↓	6.8		8.46		21.6			10	10			DATE: 3/9/96
													ID: JB
Cont	25	6.5	7.4	8.16	7.88	20.7 19.6			10	10			TIME: 11:3
100%	↓	6.4	7.1	8.13	8.84	22.4 21.0			10	10			DATE: 3/10
													ID: ~~45~~
Cont	25	6.4		8.23		20.2			10	9			TIME: 11:3
100%	↓	6.2		8.40		21.8			9	10			DATE: 3/11
													ID: 75

S.R. HANSEN & ASSOCIATES

FRESHWATER ACUTE/CHRONIC TEST DATA SHEET

START DATE _____ TIME _____ TEST MATERIAL _____ DILUENT _____
END DATE _____ TIME _____ SPECIES/AGE _____ RENEWAL FREQUENCY _____

CONC	TEMP° C	D.O.		pH		~~COND.~~ Sal	ALK.	HARD.	SURVIVAL				PREPARATION
		OLD	NEW	OLD	NEW				A	B	C	D	
Cont	25	2.9		7.83		21.2			8	8			
100%	↓	4.0		7.71		23.0			9	10			TIME: 340
													DATE: 3-12
													ID:
													TIME:
													DATE:
													ID:
													TIME:
													DATE:
													ID:
													TIME:
													DATE:
													ID:

Sequoia Analytical

680 Chesapeake Drive, Redwood City, CA 94063, (415) 364-9600, FAX (415) 364-9233
404 N. Wiget Lane, Walnut Creek, CA 94598, (510) 988-9600, FAX (510) 988-9673
819 Striker Avenue, Suite 8, Sacramento, CA 95834, (916) 921-9600, FAX (916) 921-0100

S.R. Hansen & Associates
4085 Nelson Ave., Ste. I
Concord, CA 94520
Attention: Gary Wortham

Client Project ID: Cargill Redwood City
Sample Descript: Water, N/A
Lab Number: 603-0416

Sampled: Mar 7, 1996
Received: Mar 8, 1996
Analyzed: Mar 8-9, 1996
Reported: Mar 22, 1996

LABORATORY ANALYSIS

Analyte	Detection Limit mg/L	Sample Results mg/L	QC Batch Number	Instrument ID
Total Dissolved Solids.....	1.0	21,000	IN030996160100A	Manual
Biochemical Oxygen Demand.....	1.0	4.5	IN030896405100 1A	Manual

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271
& #1210

Kenneth L. Wimer
Project Manager

6030416.SSS <1>

Sequoia Analytical

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S.R. Hansen & Associates
4085 Nelson Ave., Ste. I
Concord, CA 94520
Attention: Gary Wortham

Client Project ID: Cargill Redwood City
Matrix: Liquid
QC Sample Group: 6030416
Reported: Mar 22, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Total Dissolved Solids
QC Batch#:	IN030996 160100A
Analy. Method:	EPA 160.1
Prep. Method:	EPA 160.1
Analyst:	Y. Borenshteyn
MS/MSD #:	6030416
Sample Conc.:	21000 mg/L
Prepared Date:	3/9/96
Analyzed Date:	3/9/96
Instrument I.D.#:	Manual
Conc. Spiked:	1000 mg/L
Result:	22000
MS % Recovery:	100
Dup. Result:	22000
MSD % Recov.:	100
RPD:	0.0
RPD Limit:	0-20

LCS #:	1601YB03F-2
Prepared Date:	3/9/96
Analyzed Date:	3/9/96
Instrument I.D.#:	Manual
Conc. Spiked:	500 mg/L
LCS Result:	500
LCS % Recov.:	100

MS/MSD LCS Control Limits	70-130

SEQUOIA ANALYTICAL, #1271

Kenneth L. Wimer
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS = Matrix Spike, MSD = MS Duplicate, RPD = Relative % Difference

Sequoia Analytical

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S.R. Hansen & Associates
4085 Nelson Ave., Ste. I
Concord, CA 94520
Attention: Gary Wortham

Client Project ID: Cargill Redwood City
Matrix: Liquid
QC Sample Group: 6030416
Reported: Mar 22, 1996

QUALITY CONTROL DATA REPORT

Analyte:	Biochemical Oxygen Demand
QC Batch#:	IN030896
	4051001A
Analy. Method:	EPA 405.1
Prep. Method:	EPA 405.1
Analyst:	M. Shin
Duplicate Sample #:	9603
Prepared Date:	3/8/96
Analyzed Date:	3/13/96
Instrument I.D.#:	Manual
Sample Concentration:	6.9
Dup. Sample Concentration:	7.6
RPD:	9.7
RPD Limit:	0-30

SEQUOIA ANALYTICAL, #1210

Kenneth C. Wilmer
Project Manager

** RPD = Relative % Difference

S.R. HANSEN & ASSOCIATES

9603122

CHAIN OF CUSTODY RECORD

PROJECT NAME/SITE:: Cargill Redwood City / Crystallizer							
SAMPLERS: (SIGNATURE) Gary Wortham / Lab Manager						TYPE OF ANALYSIS	PRESERVATIVE/ COMMENTS
DATE	TIME	COMPOSITE/ GRAB	SITE LOCATION	#/SIZE/TYPE OF SAMPLE CONTAINERS			
3/7/96	0800	G	RWC	1 x 1000 ml	Amber	BOD 5day	None
"	"	"	"	"	"	TDS	None
							Please use lowest detection limits

RELINQUISHED BY: (SIGNATURE) — DATE/TIME 3/8/96 1241 — RECEIVED BY: (SIGNATURE)

RELINQUISHED BY: (SIGNATURE) — DATE/TIME — RECEIVED BY: (SIGNATURE)

Standard TAT

GG30416

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